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AN ENGINEER'S OBLIGATION TO SOCIETY--PROFESSIONAL ETHICS

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"Ideals are like stars; you will not succeed in touching them with your hands, but like the seafaring man on the desert of waters, you choose them as your guides, and, following them, you reach your destiny."

—CARL SCHURTZ.

Ethics is defined as the science of human duty. The first code of ethics of which we have record and the one which has affected human relations most was given to Moses on Mount Sinai. This is the Decalogue and has been so widely accepted that it forms the basis of our common law, and transgression of many of its precepts are now regarded as major crimes. But ethics is usually thought of as above and beyond those immortal and criminal acts covered by law. It deals with those higher rules of conduct which are supposed to set off the gentleman and professional man as a class.

The Carpenter of Nazareth gave us the basis for all codes of ethics in the Golden Rule,

"Whatsoever ye would that men should do to you, do ye even so unto them."

The apostle Paul elaborated somewhat on this.

"Whatsoever things are true,
Whatsoever things are honest,
Whatsoever things are just,
Whatsoever things are of good report,
If there be any virtue,
Think on these things."

It has been said that no gentleman needs a code of ethics, and that no code of ethics will make a gentleman out of a crook. Nevertheless, all professions have codes of ethics, and most men believe that such codes serve a useful purpose in the education of the youth, and exert a deterring influence on those who may not have the moral stamina to withstand temptation.

The member of a profession has as his means of livelihood the heritage of the ages in his science. His earning power and his opportunity depend upon the work of countless predecessors who have passed down to him the lessons of their experience. This carries with it the obligation on his part to use this knowledge for the public good. The ideal of all professions should be public service, faith and honesty.

The definition of engineering written into the con-

stitution of the Federated American Engineering Societies is:

"Engineering is the science of controlling the forces and of utilizing the materials of nature for the benefit of man, and the art of organizing and of directing human activities in connection therewith."

And the constitution goes on further to state that "as service to others is the expression of the highest motive to which men respond, and as duty to contribute to the public welfare demands the best efforts of men, the organization is dedicated to the service of the community, the state, and the nation."

All relationships with which the engineer deals involve contact with nature and her laws. This breeds straight thinking and directness of character. The engineer is a constant seeker after the truth.

The oldest engineering society in America is the Boston Society of Civil Engineers, founded in 1848. Four years later in 1852 the American Society of Civil Engineers was formed in New York City. Both of these carefully guard the quality of their membership, and attempt to preserve the highest possible professional standards. The requirements for membership in the American Society of Civil Engineers are so high that many practicing surveyors and construction engineers are excluded from membership. The requirements for membership include certification from at least five reputable members as to the moral as well as the professional fitness of the applicant.

The American Bar Association, the American Medical Association and all of the National Engineering Societies have codes of ethics governing the conduct of their members. Before going into the requirements of these codes let me quote from a Professor of Political Economy on the distinction between business and professional standards.

"There is in this respect a marked contrast between the world of business and that of the professions. It cannot be said that business has yet attained a specific code of ethics, resting on considerations broader than the sense of self-interest and supplementing the minimum requirements of the law. Such a code may be in the making, but it has not yet established itself,

and there are formidable difficulties to be overcome. When we speak of business ethics, we generally mean the principles of fair play and honorable dealing which men should observe in business. Sharp dealing, "unfair" competition, the exaction of the pound of flesh, may be reprobated and by the decent majority condemned, but behind such an attitude there is no definite code which business men reinforce by their collective sense of its necessity and by their deliberate adoption of it as expressly binding upon themselves. There is no general brotherhood of business men from which the offender against these sentiments, who does not at the same time overtly offend against the law of the land, is extruded as unworthy of an honorable calling. There is no effective criticism which sets up a broader standard of judgment than mere success."

That is, in the business world, it's a crime only if you get caught.

The word "professional" has been defined by the Supreme Court of the United States as a vocation involving relations to the affairs of others of such nature as to require for its proper conduct an equipment of learning or skill or both to warrant the community in making restrictions in respect to its exercise. The right to practice law and medicine have long been restricted to those holding licenses, and more recently engineering has been included. Licenses to practice engineering are now required in forty-four of the forty-eight states. The law provides for the revocation of the license for flagrant violations of the code of ethics. Of course the code of ethics is not mentioned in the law, but certain of its provisions are incorporated in the law.

The Taylor Society, a society to promote the art of engineering management, sets forth its ideals in the following Creed:

"The sublimest duty of the engineer is to keep the faith; the faith of the client that he will not undertake what he knows to be beyond his ability; and that with respect to what he undertakes he will give conscientious service to the limit of his ability.

"The faith of his fellow engineers that he will remain true to his science and will magnify and not cheapen it; and that he will base his efforts for public recognition upon ability, scientific attainment and actual performance, and not upon ambiguous self-laudations;

"The faith of the community that he will undertake no service inconsistent with the public welfare; and that in service consistent with public welfare, but in which the interests of groups appear to come in conflict, he will judge carefully and sympathetically the claims of rival interests and attempt to establish that unity of purpose which promotes the public welfare."

The code of ethics of the American Society of Civil

Engineers is more definite if not so rhetorical. It is not long and I will quote it completely.

"It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any member of the American Society of Civil Engineers:

1. To act for his clients in professional matters otherwise than as a faithful agent or trustee, or to accept any remuneration other than his stated charges for service rendered his clients.
2. To attempt to injure falsely or maliciously, directly or indirectly, the professional reputation, prospects, or business of another Engineer.
3. To attempt to supplant another Engineer after definite steps have been taken toward his employment.
4. To compete with another Engineer for employment on the basis of professional charges, by reducing his usual charges and in this manner attempting to underbid after being informed of the charges named by another.
5. To review the work of another Engineer for the same client, except with the knowledge or consent of such Engineer, or unless the connection of such Engineer with the work has been terminated.
6. To advertise in self-laudatory language or in any other manner derogatory to the dignity of the Profession."

The code of the American Institute of Electrical Engineers is more explicit. It contains 22 paragraphs instead of the six just quoted, but covers much the same ground.

The young engineer may say that these codes are for older men, men who are in business for themselves as consulting engineers. Realizing that there is some truth in this and that broader provision for the guidance of young men just starting in the work of their profession would be helpful, the Board of Direction of the American Society of Civil Engineers requested Dr. Daniel W. Mead, Past President of the Society, to prepare such a paper as a basis for a wide and full discussion. This paper was published in Proceedings of the American Society of Civil Engineers for January 1940.

Dr. Mead was for many years Professor of Hydraulics and Sanitary Engineering of the University of Wisconsin, and a Consulting Engineer of national and international reputation. He has had intimate contact with engineering students and young engineers both in school and out, and has made a study of professional relations and personal conduct. His paper should be read and studied by every young man entering into the practice of engineering. A list of the ten topics of the paper will be of interest.

- I. The Engineering Student and the Young Engineer.

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- II. A Code of Courtesy and Personal Conduct.
- III. Public Relations of the Engineer.
- IV. The Personal Relations of the Engineer.
- V. The Engineer's Relations to Client and Employer.
- VI. The Engineer's Relations with His Employees.
- VII. Relations of the Engineer with the Contractor.
- VIII. Business Relations.
- IX. The Ethics of Contracting.
- X. A Personal Code of Conduct and Ethics.

If one is to become an engineer, his four years in college is only the beginning of his education. He must expect to spend much of his leisure time during the ten years after graduation, in study. Much of history, literature and art can best be mastered in this way rather than in the class room.

The world expects of the engineer, first that he be a skillful and resourceful engineer, informed in materials and the sciences which adapt them effectively and economically to the satisfaction of the wants of men. This has always been so, is so today, and ever will be so. It is well to remember that the technical ability and thoroughness of the engineer will always remain his chief strength and value.

Let me quote from a recent editorial in the Engineering News Record.

"Let it be written down as a lasting truth in the creed of the profession and of the engineering school that the engineer must be first an engineer, skilled and trained in creative utilization of resources by scientific method, before he may venture to become something more. Until he has equipped himself to render to his fellows the technical service that is the essence of engineering, he ought not to dabble in other arts. . . . what will it profit him to become a dabbler in many arts if he lose the mastery of his own."

A reasonable amount of recreation and social intercourse is both desirable and essential for proper personal health and development. But a portion of one's time each week should be given to technical reading and study in order that one may advance in his chosen field.

In an investigation of engineering education a number of years ago, a letter was mailed to the members of the various national engineering societies, asking for their judgment as to the relative importance of six groups of factors in success in engineering. The table gives the weights of these groups in percentages as determined by 5441 replies.

Characteristics Necessary To Success In Engineering

Characteristics	Percent
1. Character, including integrity, responsibility, resourcefulness, and initiative.	24.0

2. Judgment, including common sense, scientific attitude, and perspective of life	19.5
3. Efficiency, including thoroughness, accuracy, and industry	16.5
4. Understanding of men, executive ability	15.0
Sub-total	(75.0)
5. Knowledge of fundamentals	15.0
6. Technique of practice and of business	10.0
Sub-total	(25.0)
Total	100.0

All of these characteristics are necessary for success and any characteristic, like any link in a chain, must hold unless there is failure. And let it be noted that the last two are what makes a man an engineer.

Success depends upon two essential factors, opportunity and the man. Opportunity is nearly always somewhere around if you know how to look for it. The common idea that "opportunity knocks once and only once at every door, and if unheeded, departs to return no more" is fallacious and pessimistic. The following little poem entitled "Opportunity" by Walter Malone expresses the matter well.

"They do me wrong who say I come no more

When once I knock and fail to find you in;

For every day I stand outside your door

And bid you wake, and rise to fight and win.

Wail not for precious chances passed away!

Weep not for golden ages on the wane!

Each night I burn the records of the day—

At sunrise every soul is born again!

Laugh like a boy at splendors that have sped,

To vanished joys be blind and deaf and dumb;

My judgments seal the dead past with its dead,

But never bind a moment yet to come.

Though deep in mire, wring not your hands and weep;

I lend my arm to all who say "I can!"

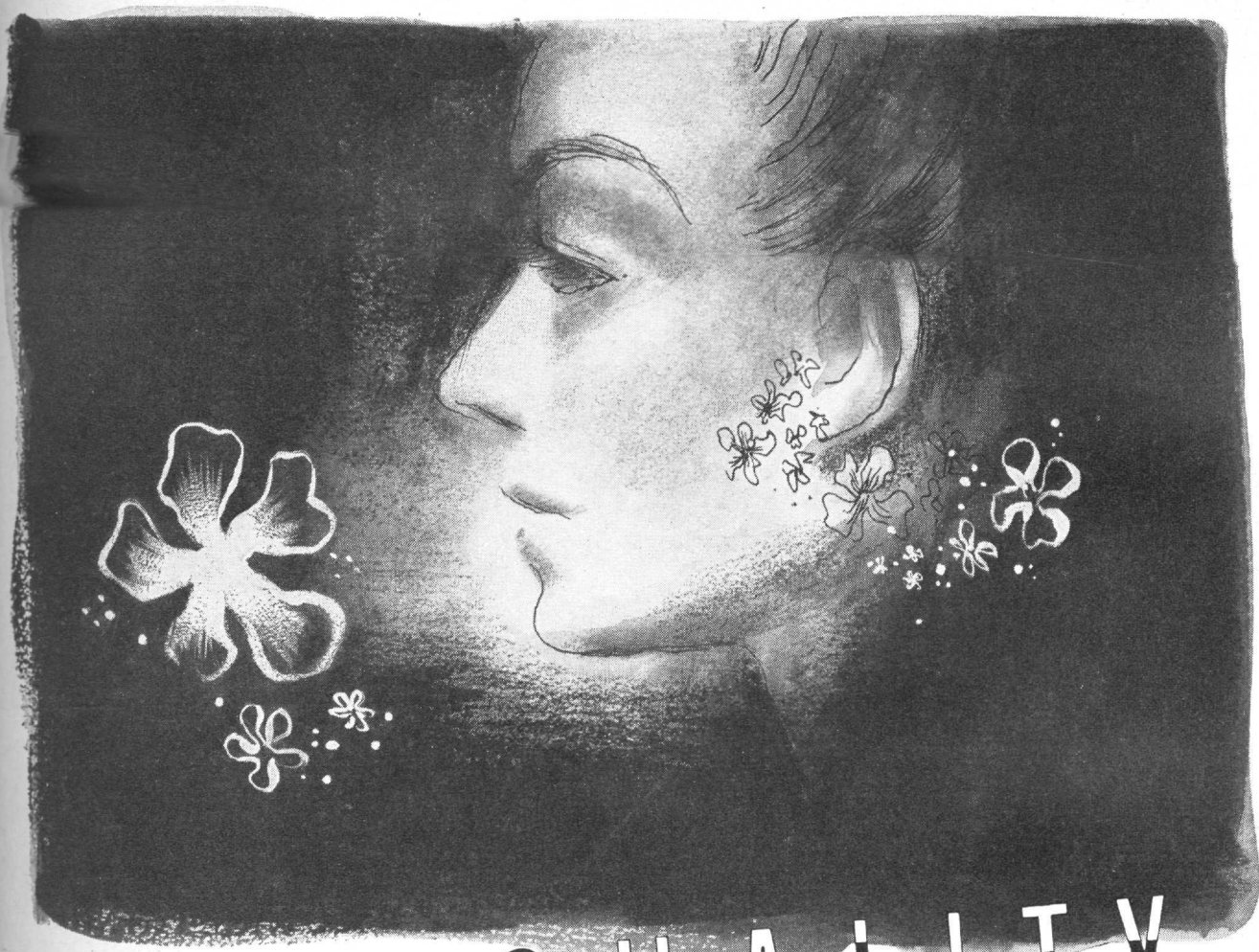
No shame-faced outcast ever sank so deep

But yet might rise and be again a man!"

In preparing this discourse I have quoted liberally from "The Ethics of the Professions and of Business", published in the Annals of the American Academy of Political and Social Science, Vol. 101 (May 1922) and from "Standards of Professional Relations and Conduct" by Dr. D. W. Mead, published in Proc. Am. Soc. C.E., January 1940.

Now I will close by quoting the last page of Dr. Mead's paper just referred to.

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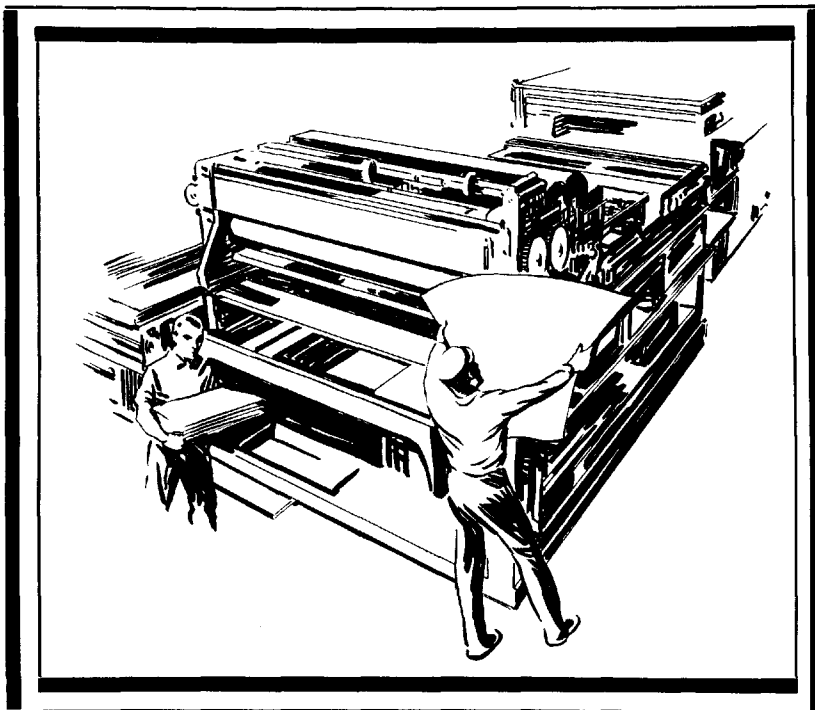
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A Personal Code of Conduct and Ethics

"The ideals of the individual are so important to his future that every engineer should determine for himself, after mature deliberation, the ideals of conduct and ethics on which he desires to found his future actions. Any code prepared by others can but approximate the ideals even of the writers themselves, and may fall short of covering the different relations

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and ideals of any individual. It would seem desirable, therefore, for each individual to formulate, in his own mind at least (and preferably in written form), a personal code so that he may review and alter his ideals as his experience seems to require. Such a code was found among the papers of Thomas Van Alstyne, a graduate electrical engineer of Cornell University, after his death which occurred on the job. While this code was evidently prepared for his own use, it should be an inspiration to others as well as a lasting memorial to this young man.

"To respect my country, my profession, and myself. To be honest and fair with my fellow men as I expect them to be with me. To be a loyal citizen of the United States. To speak of it with praise and act always as a trustworthy custodian of its good name. To be a man whose name carries prestige with it wherever it goes.

"To base my expectations of a reward on a solid foundation of service rendered. To be willing to pay the price of success in honest effort. To look upon my work as an opportunity to be seized with joy and to be made the most of, not as a painful drudgery to be reluctantly endured.

"To remember that success lies within my own self and in my own brain, my own ambition and my own courage and determination. To expect difficulties and force my way through them. To turn hard experience into capital for future struggles.

"To believe in my profession heart and soul. To carry an air of optimism in the presence of those I meet. To dispel all temper with cheerfulness, kill doubts with strong conviction, and reduce action with an agreeable personality.

"To make a study of my business. To know my profession in every detail. To mix brains with effort and system in my work. To find time to do every needful thing by not letting time find me doing nothing. To hoard days as a miser does dollars. To make every hour bring me dividends in increased knowledge and healthful recreation. To keep my future unencumbered with debts. To save as well as to earn.

"To cut out expensive amusements until I can afford them. To steer clear of dissipation and guard my health of body and peace of mind as a most precious stock in trade.

"Finally to take a good grip on the joys of life. To play the game like a man. To fight against nothing as hard as my own weakness and endeavor to give it strength. To be a gentleman and a Christian so I may be courteous to man, faithful to friends, and true to God."